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(19) (CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) Artificial Hair Made of a Flame-Resistant Polyester
Monofilament

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(57) 5 Claims

Notice: The specification contained herein as filed

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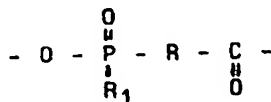
HOE 89/F 192

Abstract

Artificial hair made of a flame-resistant polyester monofilament

Artificial hair is made of a flame-resistant monofilament formed from polyesters of dicarboxylic acid and diol components into which a flame retardant has been incorporated.

The flame retardant is present in the polyester chains as copolymerized elements having the structural units of the general formula



where R is alkylene, arylene or aralkylene and R₁ is alkyl, aryl or aralkyl.

Description

Artificial hair made of a flame-resistant polyester monofilament

- 5 The invention relates to artificial hair made of a flame-resistant monofilament formed from linear polyesters.

Since the provision of natural hair is becoming more and more difficult for hair substitute manufacturers, artificial hair is becoming increasingly more important. The
10 artificial hair incorporated in wigs, toupees and hair substitutes or prostheses, not only for humans but also for toys (dolls etc.), these days consists in particular of modacrylic or polyester monofilaments. These materials are all flammable.

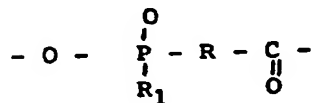
- 15 JA applications 73 06 616, 75010 413, 47 14 416 and 74 044 009 disclose artificial hair made of polyesters which contain a halogen compound as flame retardant. However, halogen compounds, when exposed to heat, can lead to toxic compounds and therefore are unsafe for use
20 near humans. JA application 61 194 216 discloses animal hair-like polyester fibers which contain a phosphorus compound as flame retardant. These fibers are likewise unsuitable for use near humans. DE-A-2 118 551 finally likewise mentions the flameproofing of artificial hair
25 without however indicating a suitable way of doing so.

- The present invention has for its object to provide artificial hair made of a monofilament formed from linear polyesters which combines ease of manufacture with good flame-resistant properties without thereby creating the
30 risk of toxic side effects.

This object is achieved by the present invention for artificial hair of the type indicated at the beginning when the monofilament consists of polyesters which have been formed from dicarboxylic acid and diol components

and into which a flame retardant has been incorporated.

Preferably, the flame retardant is present in the polyester chains as copolymerized chain members having the structural units of the general formula



- 5 where R is saturated open-chain or cyclic alkylene, arylene or aralkylene and R₁ is alkyl of up to 6 carbon atoms, aryl or aralkyl.

Such polyesters, where the property of flame resistance is obtained through modification of the raw material, are known from DE-C-2 346 787. However, the applications mentioned therein include only fibers and filaments for textiles and industrial articles such as tarpaulins, fabrics, carpets and curtains.

15 The present invention by contrast for the first time proposes the use of monofilaments formed from flame-resistant polyesters for artificial hair. This has made it possible to render such artificial hair flame-resistant in a simple manner without a need for costly finishes which can have toxic side effects.

20 To meet all the requirements which artificial hair has to meet in respect of luster, various degrees of luster can be obtained via varying levels of addition of a delusterant. A sparkle matching that of human hair can be obtained through a specific cross-sectional shape of the monofilament.

25 The artificial hair formed according to the present invention combines flame-resistant properties with excellent thermal light and moisture resistance. A

further advantage is that the hair formed according to the present invention, unlike human hair, is resistant to microbes and thus is suitable for permanent attachment to the head.

5 An illustrative embodiment of the invention will now be explained with reference to the drawing, where

Fig. 1 is a schematic representation of an artificial hair on an enlarged scale; and

10 Fig. 2 shows a cross-section of the artificial hair of Fig. 1.

The artificial hair depicted in the drawing consists of a single monofilament formed from linear polyesters which has been rendered flame-resistant through a raw material modification as described in DE-C-2 346 787.

15 As shown in Fig. 2, the artificial hair has a circular cross-section. The diameter of the artificial hair is within the range from 0.050 to 0.10 mm. The diameter is chiefly race determined. European hair is thinner than Indian hair, Indian hair is in turn thinner than Asiatic hair.

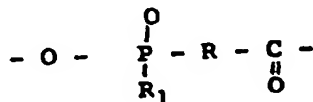
20 Instead of a circular cross-section the artificial hair may also have an elliptical, dumbbell- or bone-shaped or some other non-round cross-section. This makes it possible to match the sparkle of the hair to that of

25 human hair.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. Artificial hair made of a flame-resistant monofilament formed from linear polyesters, wherein the monofilament consists of polyesters which have been formed from dicarboxylic acid and diol components and into which a flame retardant has been incorporated.

2. The artificial hair as claimed in claim 1, wherein the flame retardant is present in the polyester chains as copolymerized chain members having structural units of the general formula

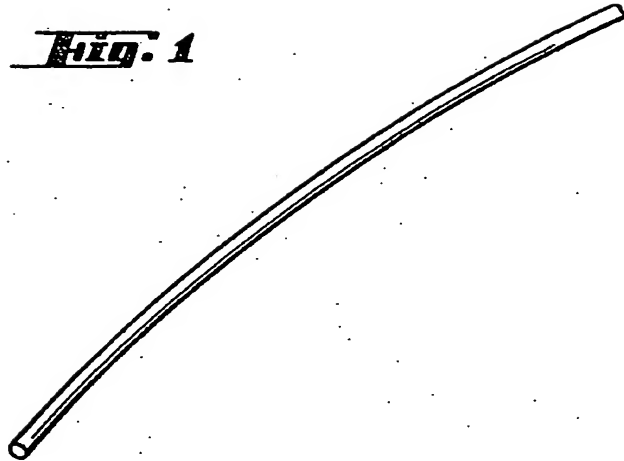


where R is saturated open-chain or cyclic alkylene, arylene or aralkylene and R₁ is alkyl of up to 6 carbon atoms, aryl or aralkyl.

3. The artificial hair as claimed in claim 1 or 2, wherein the monofilament has a round cross-section and a diameter of 0.050 - 0.10 mm.

4. The artificial hair as claimed in claim 1 or 2, wherein the monofilament has a dumbbell- or bone-shaped cross-section.

5. Artificial hair made of flame-resistant monofilament as claimed in claim 1 and substantially as described herein.

Fig. 1**Fig. 2**

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